

THE INTERACTIVE EFFECT OF TASK DEMANDS, AUDIENCE DEMANDS AND
INDIVIDUAL DIFFERENCES ON BEHAVIOR IN THE PRESENCE OF AN
OBSERVER

BY

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To my parents, Ken and Fran

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Contemporary research on the effect of an observer has investigated the effects of the nature of the task, the type of audience and individual differences in the people being observed but these variables are usually examined singly or in pairs so the possibility of a three-way interaction cannot be explored. As well, the dependent measure is typically a performance measure thus limiting our understanding of the effect of an audience. A study was designed that demonstrated that selection of a more or less difficult task differentially affects evaluation of an individual depending on how well that person is likely to do

on the task. A second study was then designed to test for a three-way interaction between task demands, audience demands, and individual differences on the selection of level of difficulty in a task. After being told the subject did better or worse than average on a task, he or she then selected similar problems of varying difficulty to work on in the presence of a variously described observer. The selection of problems was analyzed in a regression model with Public Self-Conscious (PSC) and Locus of Control (LOC) entered as the individual differences. A main effect for task demand (outcome expectancy) and an interaction between audience demand and PSC were obtained. The findings are discussed in terms of impression management theory and methodological considerations in the design of further studies of audience effects.

CHAPTER I INTRODUCTION

In 1965 Robert Zajonc focused the disparate rays of nearly three quarters of a century of research on audience effects through the lens of Hull-Spence drive theory and ignited a fervant interest in theorizing about that phenomenon. With elegant simplicity, he was able to reconcile the previously reported facilitative and debilitating effects of audiences on the performance of individuals. Perhaps it was consternation with this elegance or perhaps, as Zajonc (1980) has suggested, it was distress with his use of a four-letter word--for whatever reason, it was not long before challenges to his account of audience effects began to emerge.

To anticipate and forestall a possible misunderstanding, the term audience effects is being used so as to include, but not be limited to, social facilitation. In a later section I will briefly argue that social facilitation is a special case of audience effects that pertain to a class of behaviors that may vary in quantity (most typically in frequency of response) as a function of the presence of either observers or other performers. As will become apparent, the early theories of audience effects were

primarily designed to account for social facilitation, a fact that raises difficulties when a wider range of behavioral changes is considered.

The theoretical accounts of audience effects that have been advanced since 1965 can be grouped into three categories. The first of these groups includes Zajonc's account and theories that represent only minor variations on the basic drive theory framework. All these theories assume that there is a more or less direct relation between the presence of an audience and increases in arousal and a direct relation between arousal and performance. The dimension along which these theories distinguish themselves is audience demands, i.e., what kinds of audiences will elicit heightened arousal. The second category of theories describes some sort of mediating process between the audience and arousal. This phenomenological component represents a fundamental departure from the framework of a basic drive theory in that the assumption of a direct relation between audience presence and arousal is rejected. The second assumption remains intact, however, as a direct relation between a generalized increase in arousal and changes in performance is still assumed. The final category of theories breaks completely with the drive theory orientation. These teleological theories emphasize the goals or functions of behavior and use these to explain the changes in behavior that result in the presence of an audience.

These three categories of accounts appeared chronologically in roughly the order I described them. As is the case in the evolution of any scientific theory, the closer examination of the phenomena that was prompted by the existence of a theory revealed events that could not be readily explained by the original theory. This prompted revisions which, as they became more fundamental, resulted in basic conceptual changes in the description of the phenomena. In the review of the literature, I will describe the discoveries that seem to have been most influential in guiding this succession of perspectives.

Curiously, while these refinements and rethinking have been proceeding, little attention has been focused on the role that individual differences play in an account of audience effects. I say curiously for two reasons--first, psychologists have recognized the potential role of personality characteristics (Geen, 1980; Baumeister, 1982) and second, there are several well studied characteristics that appear to be obviously related to audience effects. These will be examined in a separate section of the literature review.

Having examined what the various theoretical perspectives can and cannot do and after considering the influence that individual differences may have, one is left with a number of insights regarding the nature of audience effects that must be integrated into a general theoretical framework. It

will be proposed that changes in an individual's performance on a task when he or she is in the presence of an audience can best be thought of as attempts at managing the impression of the audience. Further, such attempts at self presentation or impression management will be a function of the interaction of three factors: the nature of the task (task demands), the nature of the audience (audience demands) and the personality characteristics of the individual. Since these components have been integrated in social learning theory (Mischel, 1973; Bandura, 1977), this is the perspective that will be adopted to explain why an individual will engage strategies of impression management.

CHAPTER II REVIEW OF THE LITERATURE

Drive Theories

For most of its history, research on audience effects was impeded by the troubling presence of two robust and contradictory sets of findings. While some research demonstrated that the presence of an audience enhanced the performance of the actor (social facilitation), other studies revealed just the opposite effect (social interference) such that people performed more poorly in the presence of an audience. Then, in 1965, Zajonc proposed that these conflicting results could be resolved within the framework of a simple drive theory. One of the basic postulates of drive theory is that behavior is a function of drive and habit strength (Spence, 1956). Zajonc (1965) reasoned that the differential effect of audiences (which he assumed to generally increase drive) could be traced to the second component in the drive theory formula. More specifically, he proposed that in a simple or well learned task, the dominant responses are correct while in a more difficult task or one that is just being learned, the dominant responses are incorrect. Since increases in drive result in increases in the frequency with which the dominant

response is emitted, Zajonc's reasoning suggests that an audience would facilitate the performance of well learned tasks and interfere with the performance of tasks that the actor is learning.

Unfortunately, as conceptually elegant as it is, it was not long before it became apparent that this account was empirically flawed. Zajonc had suggested that the mere presence of an audience would be sufficient to increase drive and thus affect behavior. There is, however, ample evidence to challenge the claim that the mere presence of a conspecific is a sufficient condition for audience effects (Tolman, 1968; Cottrell et al., 1968; Froming et al., 1982). It appears that only audiences possessing certain characteristics will bring about social facilitation or interference.

A second problem with this account is that there are instances in which there does not seem to be a direct relation between physiological arousal (which is generally how drive has been operationalized) and overt behavior. Berger and his associates used a paired-associate learning task to argue that audiences may affect the use of mediating processes which in turn could affect performance (Berger et al., 1981). By varying instructional sets independently of the audience condition, they found superior recall when subjects mouthed the words during learning. After demonstrating that mouthing is more likely to occur when an

audience is absent, they were able to argue for a more indirect, non-drive relation between audiences and performance.

Addressing this same issue from a different angle, Carver and Scheier (1981b) obtained measures of palmar sweat while their subjects worked on a letter-copying task. In a within-subject design, subjects worked on the task alone and then a second time either alone or after an audience was introduced. They found that palmar sweating increased when the audience was introduced but that there was no significant difference between groups during the second copying task. Carver and Scheier (1981a) agree that these findings can be reconciled with drive theory, but the additional assumptions substantially weaken that theory.

In summary, then, there are at least two general reasons for regarding a simple drive theory account of audience effects with scepticism. The first is that there does not seem to be a direct relation between drive and the presence of other people (or conspecifics) and the second is that there does not appear to be a direct relation between drive and performance. The second of these two problems has never been addressed in a truly satisfactory manner but the first problem has sparked a number of revisions of Zajonc's original theory.

The simplest revision was proposed by Cottrell (1972). He labeled audience effects as evaluation apprehension and

argued that it is a learned response. If the individual expects that his or her behavior will be evaluated, this expectancy increases drive. On Cottrell's formulation, this expectancy could be either positive or negative depending on whether the individual expected a positive or negative evaluation.

There are three general difficulties for this account. The first is that there are reported instances of facilitation when evaluation is not possible (Chapman, 1973; 1974; Markus, 1978; Rajecki et al., 1977). Since the Rajecki et al. (1977) study parallels many aspects of the Cottrell et al. (1968) study, it can probably be viewed as a failure to replicate the latter's findings. In the Cottrell study, subjects were required to report their perception of words that were presented below threshold. The dependent measure was the frequency of reporting an earlier presented word on blank trials in which no word was presented. It was found that the tendency to report a previously seen word was greater when two observers were present than it was when two blindfolded and inattentive people were present. In the Rajecki study, subjects navigated an electronic maze in the presence of either a blindfolded or sighted person, or alone. In terms of the time required to run the maze, there was no difference between the two audience conditions; subjects in these conditions were faster than those in the alone condition. Since neither of the audiences knew what

the subjects were doing or how well they were doing, it is, as Geen (1980) points out, difficult to reconcile these findings with notions about evaluation apprehension.

The second problem with the notion that audiences can simply be characterized as either evaluative or non-evaluative arises from the finding that the effect of an evaluative audience can be moderated. Geen (1977) compared the performance of subjects working on anagram puzzles in four different audience conditions. He used the three standard conditions (i.e., alone, observation without evaluation and observation with evaluation) but he included a fourth condition in which the evaluative audience would give advice to the subjects about how to improve their performance on subsequent puzzles. He found that the two standard observer conditions interfered with performance (a finding which is contrary to the evaluation apprehension hypothesis) but more importantly, he found that the audience giving advice produced only slight interference compared with the alone condition. This study suggests that audience demands should not be dicotomized along a simple evaluative/non-evaluative dimension.

In addition, findings that suggest the presence of evaluation apprehension have been very inconsistent. In studies that examined effects when positive and negative evaluations were anticipated, Good (1973) found an effect only for positive expectancies and Weiss and Miller (1971)

found one only for negative expectancies. While these studies prove the importance of specifying the nature of an audience, these inconsistencies, together with the other findings that were just described, convincingly demonstrate that any simple differentiation of audiences based on their evaluativeness will not be equal to the task of predicting audience effects.

Latane's (1973) social impact theory is, perhaps, the best example of a theory that explicitly incorporates the complex nature of audience characteristics into its model. This theory has been tendered as social psychology's answer to Steven's (1957) psychophysical laws in perception. Latane proposes that the impact of an audience is a function of the strength, immediacy and number of the people in the audience (Latane & Nida, 1980). Strength is operationalized as involving the observer's status, age, socioeconomic status, prior relationship with the actor and/or future power over the actor. Immediacy refers to how close in space and time the audience is and how many barriers separate the audience and the actor. Number, I suppose, is self-explanatory.

Since this is an unmediated drive theory, the same kinds of objections that were directed against Zajonc's approach are appropriate here. Depending on how much detail is built into the concept of strength, it is, at least in principle, reasonable to suppose that the problem of relating audience

to drive can be solved. It is less clear, however, that the second problem of relating drive to performance can be solved or even addressed in a theoretically cogent manner.

Further to this, the theory becomes encumbered with accounting for seemingly contradictory evidence regarding the effect of number. Much of the research that Latane has conducted on this question relies on the self-reports of individuals who are asked to imagine a hypothetical situation. For example, Jackson and Latane (1981) presented pictures of varying size audiences to subjects and asked them to rate how anxious they would be if asked to perform in front of each audience. This sort of methodology introduces what can only be viewed as two weak links in so far as it relies on both self-reports and the subject's ability to accurately imagine a hypothetical situation and his or her behavior in that setting. Latane reanalyzed data from other experiments (such as Porter's [1939] study of stutterers) and found that the reported effect of audience size is consistent with his predicted power function (Latane & Nida, 1980) but there appear to be a wide range of exceptions to his findings. Borden (reported in Borden, 1980) examined the effect of audience size on the willingness of subjects to perform an embarrassing act, Knowles et al. (1976) conducted a field study in which they examined the distance with which individuals would walk around varying size groups, and Taylor (1977) examined the effect of

audience size on aggression. With homogeneous audiences, all of these studies revealed abrupt ceiling effects typically noting the greatest change between none and one.

Latane's contribution seems, on balance, to be more a heuristic one. While he has suggested several characteristics of audiences that may affect the impact they have on individuals, he has probably been too zealous in promoting his theory as a psychosocial parallel to psychophysics. And by proposing that all these factors have a single, generalized effect (i.e., increasing drive), it seems that the theory becomes mired in the problems of relating drive to behavior.

Mediated Drive Theories

While the theories just described involve degrees of departure from a simple drive theoretic account of audience effects, the ones to be included in this category represent a fundamental reconceptualization of the phenomena. They are still drive theories in so far as they posit that an increase in drive results from the presence of an audience and causes changes in behavior. But they are fundamentally different in so far as they posit some sort of attentional mechanism that intervenes between the presence of an audience and increases in drive.

The simplest of these theories is the conflict-drive theory proposed by Sanders and Baron (1975). They contend

that the presence of an audience is distracting. When the individual is distracted from the task he or she is doing, the demands of the task come into conflict with those of the audience and the result is an increase in drive. The distraction hypothesis has some plausibility if one considers tasks that require a certain amount of endurance--for example, a cheering crowd may distract a runner from thinking about how tired he or she feels and thereby facilitate running. Similarly, it is not difficult to imagine how distraction could cause social interference. On closer examination, however, it remains an open question as to whether or not individuals are actually distracted from the execution of their task by the presence of an audience.

The self-reports of subjects participating in experiments give us some reason to pause. Neither Sanders et al. (1978) nor Baron et al. (1978) were able to find any evidence from the self-reports of their subjects that they felt distracted while doing their tasks. Self-reports, and especially those of cognitive processes, are currently viewed with scepticism by some psychologists (Nisbett & Wilson, 1977). But if it should turn out that such reports are valid (Ericsson & Simon, 1980), this particular finding may raise serious questions for the view.

Also troubling are the assumptions Sanders and Baron apparently make about social behavior. Specifically, they

assume that doing X in the presence of another person is to be analyzed as consisting of two separable tasks, i.e., the performance of X and manipulating the audience. (Actually, this might be more accurately stated as doing X for purpose O and doing X for purpose A, where O represents the original purpose and A represents the demands, real or imagined, of the audience.) To be sure, doing X alone and doing X in the presence of another person are two different tasks, but is there any reason to believe that the later actually consists of two tasks? I think not. Neisser (1976) has argued that one must be careful about how one goes about conceptualizing so-called divided attention tasks. After practice on one such task, Spelke et al. (1976) found that subjects' performance continued to improve after competition had been reduced. This was interpreted as demonstrating that, over time, two tasks become a single, well practiced task.

From roughly the age of five when children enter school, they learn how to do virtually everything--including learning new skills--in the presence of other people. While working with other people may create demands that complement those of the task simpliciter, it may not be accurate, at least in the case of the college students who serve as our subjects, to view the audience demands as conflicting with the task demands. To be sure, the presence of an observer may be momentarily distracting but it is not clear that this

impact is sufficient to influence most behavior of any duration.

Before leaving this discussion of mediated drive theories, one final point should be addressed concerning a feature of these theories that is shared by their simpler cousins, the direct drive theories. This feature is the nature of the behavior that is studied in these investigations of audience effects. Psychologists have typically selected a performance measure so the question is usually one of determining if more (or less) work is done or if more (or fewer) correct responses are made. This focus is easy to understand when viewed in terms of Zajonc's formulation of audience effects as a strengthening of the dominant response, but it seems intuitively obvious that audience effects are more wide-ranging than this.

In addition to this purely quantitative change in behavior, the presence of an audience may also precipitate a qualitative change in the behavior of the individual being observed. That is, it seems that people are just as likely to adopt a different strategy in the execution of a task as they are to change the rate at which they work on the task when they are being observed. An investigation of this possibility requires some understanding of the goals of the behavior and what responses are capable of leading to these goals. While some audiences may simply increase the rate of a response directed toward the original goal, other

audiences may make a new goal more important and therefore result in qualitative changes in the kind of response. The theories that will be reviewed in the next section pursue this line of reasoning and hence represent a second fundamental change in how the phenomena of audience effects are conceptualized.

Teleological Theories

Evidence that the presence of audiences may result in qualitative changes in behavior has been described by Froming et al. (1982) and Borden (1975). Both of these studies suggest that changes in the nature of the audience can influence the direction of aggressive behavior. In a within-subject design, Borden (1975) factorially crossed values of the audience (pacifistic vs. aggressive) with sex of the observer and found that the level of shock administered by subjects in an aggression paradigm varied as a function of the audiences' values. When subjects were observed by aggressive audiences they delivered more shock than they did on later trials when they were alone and similarly, when they were observed by a pacifistic audience they delivered less shock than when they were alone.

Drive theories are equipped to explain an increase in frequency of a dominant response but in this case the theories appear to run into trouble. In the first place, it is not clear that there is a dominant response (in the sense

that responding with either a stronger or weaker level of shock is more likely) or, if there is, which response is dominant. And second, regardless of whether or not one response is dominant, the question of why one audience increases the frequency of a certain response, (i.e., using a high or low level of shock), while the other audience has just the opposite effect goes unanswered. It seems better, therefore, to view this effect as a qualitative change in strategy that is designed to bring behavior into closer conformity with a standard possessed by the audience. This emphasis on the goals of behavior is a property of two theories that explicitly address the issue of audience effects, Duval and Wicklund's (1972) theory of objective self-awareness and impression management theory (Schlenker, 1980).

Duval and Wicklund (1972) assume that a person's awareness is alternately focused on an aspect of the self or the external environment. Since both states of awareness occur in individuals, the target of this selective focusing is believed to be situation dependent. One of the stimulus conditions that elicits self-focused attention or objective self-awareness is the presence of other persons. While in the state of objective self-awareness, the individual focuses attention on his or her performance as it compares to a standard against which other people are likely to be evaluating the behavior. If this comparison reveals a

discrepancy between the actual performance and the standard, the individual experiences an increase in negative affect.

One way to reduce this negative affect is to simply remove oneself from the stimulus conditions that evoke the self-focusing. But where this is impossible or impractical, the alternative is to change one's behavior. This latter alternative was clearly the one selected by subjects in the Borden (1975) study when they made their behavior either more or less aggressive depending on the values they perceived the observer having.

According to Duval and Wicklund, then, one's sense of self is derived from a comparison of one's own attitudes or behavior with standards of correctness. The significance of an audience, on their view, lies in its capacity to remind the individual that he or she is an object in the world, i.e., something that is being observed, and hence induce a state of objective self-awareness in which self-evaluation occurs. Greenwald and Pratkanis (1984) have built on this notion to describe a concept of the self that is differentiated by various types of audiences. The private self is the self that emerges when the comparison in self-evaluation is against an audience of significant others. When this audience is more general, the result is a public self. As well, there is a collective self that is a product of some specific reference group such as one's teammates in a sport.

We ordinarily say something like, "John does not appear to be himself today," when John is not acting as he typically does. But if we are fellow swimmers on a swim team and have only seen John at meets and practices, it may be that what we are familiar with is John's collective self, species swimmer. On the day in question, it may be, for one reason or another, that we are seeing either John's private self or his public self. The significance of an audience, on Greenwald and Pratkanis's view, is that it provides the "one reason or another." An implication of this view is that any given activity may be pursued in one of several different ways depending on the type of audience present. For example, the collective self may demonstrate mastery of different strokes and perfect technique while the public self displays pure speed in the water.

Impression management theory is an account of the behavior that is likely to occur when an audience is present and the individual's actions are intended, at least in part, to influence that observer's ideas about the actor. Central to the theory is the proposition that behavior is primarily motivated out of a need for power (Schlenker, 1980). What an individual wants is to be able to exert enough social influence to guide other peoples' actions. In order to have this influence, one of two capabilities is essential: either the individual must have the ability to reward or punish a target individual or the individual must have the

ability to control perceptions, beliefs and attitudes of the target. Since the first of these abilities is limited for most of us, impression management (or the control of perceptions, etc.) is the most common means whereby social power is exercised.

In developing this account, the theory has attempted to describe the strategies and techniques that individuals use to manage the impressions they project to other people (Schlenker, 1980; Snyder, 1981). More recently, however, Schlenker and Leary (1982) have described a self-presentation model of social anxiety that specifies the antecedent conditions of anxiety that arises in situations in which the individual may be evaluated. While this account includes parameters that are specifically related to social anxiety, the general framework seems adequate to the task of explaining more diverse audience effects. The model proposes that social anxiety will occur when the individual does not believe that his or her performance on a task will have the desired effect on the audience. If we shift the focus of attention away from this discrepancy between what is expected and what is desired and instead, concentrate on the expectancies themselves, we may be looking at the key constructs in an account of audience effects. Discrepancies are said to arise when the individual's performance will not suitably impress the audience. This may be because the individual believes the required behavior cannot be done or

because the individual believes that the particular audience has certain characteristics such that the behavior will not have the desired effect. As will be seen when I discuss social learning theory, these expectancies about personal efficacy and outcomes are probably central in a general account of behavior and more specifically, audience effects.

Individual Differences

In his review of research on individual differences in audience effects, Geen (1980) describes three criteria that a theoretical account must satisfy if it is to adequately explain the effects of audiences on individuals. First, it must be able to specify the motivational significance of the audience. Second, it must specifically relate this motivational influence to performance on the experimental task in question. And third, if individual differences are being taken into account, the relation between personality characteristics and motivational states must be specified. In other words, for any given task, one must be able to explain why certain types of individuals will perform that task as they do when in the presence of certain types of audiences. If one is not concerned with individual differences, then "certain types of individuals" can simply read "all individuals." All the theories reviewed thus far have seemed to be concerned primarily with just the first two criteria described by Geen. (And some, most notably

Zajonc's original position and Sanders and Baron's [1975] distraction-conflict theory, have not even bothered to differentiate types of audiences.) This is somewhat surprising, for, as will be seen shortly, several personality characteristics have been described that bear an integral relation to the behavior of individuals when they are in the presence of other people.

Since little systematic work has been done to explore the relation between personality characteristics and audience effects, some more or less arbitrary guidelines had to be adopted to guide selection of various dimensions. The first criterion was that the characteristic had to be conceptually related to what one might presume to be some of the psychological processes involved in audience effects. That is, the dimension, as it is conceptualized, should differentiate individuals on the basis of how they relate to, interact with, or respond to other individuals. The second criterion was that there had to be some research already in existence relating the variable to audience effects. And the third criterion was that the construct validity and reliability of each of the test instruments had to be well established. On this basis, the following characteristics have been included in this review: audience anxiety (Paivio et al., 1961), locus of control (Rotter, 1966), Machiavellianism (Christie, 1970), need for approval or social desirability (Crowne & Marlowe, 1960), and public self-consciousness (Fenigstein et al., 1975).

Perhaps the most frequently examined variable in this research has been trait anxiety. This is not surprising given that the most popular theoretical orientation to audience effects has been drive theories which postulate a heightened state of arousal in the presence of an audience. Since anxious persons are probably most readily aroused, this variable would seem to be directly on target from the point of view of a drive theorist. The picture that has emerged from much of this research, however, has been confusing (Geen & Gange, 1977). This confusion may have come about because research has typically relied on highly generalized measures of the trait. Paivio (1963) hypothesized that a useful measure of anxiety should be directly related to audience anxiety. He used the audience anxiety (AA) subscale of his Children's Audience Sensitivity Inventory (Paivio et al., 1961) to study children who were engaged in public speaking. Half the children were kept in isolation for 20 minutes before giving their speech. Using duration of the speech as the dependent measure, he found an interaction between AA and isolation with isolated subjects who were high on AA speaking for the shortest time. In another study (Paivio, 1965), he related AA with expectancies and found that subjects who were high on AA and expected to receive praise told the longest stories in a second story-telling session.

These studies are instructive for a couple reasons. First, they underscore the importance of having a very specific and conceptually relevant measure of the trait in question. Other subscales of the CASI did not produce the interactions obtained in the studies just described. And second, the direction of the effects points out the need to be cognizant of both audience and task demands when predicting the three-way interaction between audience, task and personality characteristics. In the first study no expectancies were made salient and half the subjects had lots of time to sit and speculate about the task they were going to do. Under these circumstances, the anxious subjects abbreviated their performance. This effect contrasts with that in the second study in which expectancies were made salient. In that study, when anxious subjects expected praise, their performance was apparently facilitated as they told the longest stories.

It has already been pointed out that the primary motive that propels impression management is the desire to control or at least influence the beliefs and attitudes of other individuals. It seems reasonable to suppose, therefore, that people who believe they can effectively control others will be most likely to engage the tactics of impression management. With this in mind, we might expect measures of locus of control to predict the likelihood of audience effects since it measures the degree to which an individual

believes he or she can influence events. Research has found that externals are more susceptible to social influence in the conformity paradigm (Crowne & Liverant, 1963; Tolor, 1971) and in a verbal conditioning paradigm (Getter, 1966). Ritchie and Phares (1969) found that externals are differentially responsive to the status of a persuader in an attitude change paradigm. They found an interaction between locus of control and status of the persuader with externals changing most with a high status persuader. While the implication of these studies is that internals resist social influence, there is no evidence that they, in turn, are more likely to exert it.

Those familiar with locus of control will recognize the possibility that a situation could arise in this research that is much akin to the problem described for research on anxiety. Rotter's (1966) Locus of Control Scale has been subjected to much factor analysis over the years in attempts to improve its predictive utility. The validity of one of the first of these analyses has been well established and it is probably most relevant to the question of audience effects. Mirels (1970) noticed that some of the items on the scale referred to events occurring within one's personal sphere of activity (e.g., When I'm right I can convince others) while other items refer to world events or politics (e.g., The world is just so complicated that I just cannot figure things out). He conducted a factor analysis which

differentiated these two dimensions. It seems that the private dimension may be the most useful for further research in audience effects since it purportedly provides some index of the individual's beliefs about how effectively he or she can influence people or events immediately connected with him or her. It should also be pointed out that locus of control does not address the issue of motivation so its predictive utility may be somewhat limited.

One personality variable that does explicitly include the concept of motivation in its measurement is Machiavellianism. The components that are included in the measure of Machiavellianism are 1) one's belief that people can be manipulated, 2) one's willingness to (attempt to) manipulate other people, and 3) one's skill or ability in manipulation. Taken together, these components seem sufficient to predict the likelihood of manipulation when audience and task demands are held constant. So, to the extent that impression management amounts to manipulation of an audience, Machiavellianism should go a long way toward predicting audience effects.

Geis and Hopstock (cited in Geis, 1978) explored the impact of Machiavellianism in a study that varied both audience and task demands as well as the personality characteristic. They had subjects do two tasks either with an audience present or alone. One of the tasks was a

paired-associate learning task and the other was a performance task in which subjects cancel vowels on a page of prose. In the learning task, the audience manipulation had no effect on the High Machiavellians (Hi Mach's) but the Low Machiavellians (Lo Mach's) did better than the the Hi's in the alone condition and worse than the Hi's in the audience condition. On the performance task, Hi Mach's were better than Lo Mach's overall and there was greater improvement for Hi's when they did the task before an audience. The explanation that Geis (1978) provides for this pattern of results is based on drive theory, after which the design is obviously inspired. She reasoned that both Hi and Lo Mach's experience arousal in the audience condition but that the Lo's attribute this arousal to anxiety over evaluation while the Hi's attribute it to interest in the task. This reasoning is based on the assumption that Hi's continue to concentrate on the task in the audience condition (presumably because they view people with more detachment) while the attention of Lo's shifts to the audience when they are present.

I don't think this explanation of the results requires much comment, except to note that it only appears to account for about half the findings. Why is the behavior of Hi Mach's unaffected in the learning task and why do the Lo Mach's improve in the presence of an audience in the performance task? Neither is it necessary to say much about

the design of the study, both audience and task demands are poorly operationalized. In the case of audience demands, the differentiation follows Zajonc's (1965) model by simply addressing the question of mere presence without exploring a more detailed analysis of the nature of audiences. The operationalization of task demands fares even more poorly since different tasks are used in the comparison between learning and performance. This failure to control for the type of task would be inconsequential only if the learning/performance distinction is the only one appropriate to an analysis of task demands. Notwithstanding these limitations, the study does underscore the importance of the criteria that Geen (1980) outlined for an adequate theory of audience effects. The interaction that was obtained between task demands, audience demands and personality characteristics convincingly demonstrates the need to specify the properties of each of these components and to explain how they work in combination with each other if one is to provide an adequate account of audience effects.

An important aspect of impression management is the assumption that people often endeavor to present themselves in a favorable light or at least in ways that will minimize the likelihood or extent of negative evaluations (Goffman, 1959). It seems reasonable, therefore, that people who have a high need for approval would be more likely to engage impression management tactics than would those for whom this

need is not as great. There is evidence that conformity behavior increases with need for approval (Strickland & Crowne, 1962) and that people with a high need for approval are more likely to avoid risks and the possibility of negative evaluation (Efran & Boylin, 1967). Taken alone, this variable may be too general to be of much predictive utility but it might be usefully combined with other personality characteristics that do not have a clearly specified motivational component. For example, an individual with an internal locus of control may be more likely to engage the techniques of impression management if he or she also has a high need for approval.

A second personality variable that may provide a motivational component in much the same way that need for approval does is public self-consciousness (PSC). This characteristic is measured by a subscale on the Self-Consciousness Scale (Fenigstein et al., 1975). A glance at the items on this scale suggests that it could be renamed as an impression management scale (for example: "I usually worry about making a good impression" and "I'm concerned about the way I present myself"). What is known about the relation between PSC and audiences closely parallels the relation between need for approval and audiences that was described above. Froming and Carver (1981) found greater conformity in Hi PSC's and Fenigstein (1979) found that Hi PSC's react more strongly to social rejection. In a recent

study that investigated the relation between PSC and audience demands, one of the undergraduates in the psychology program at the University of Florida compared the length of time that Hi and Lo PSC's would sing in front of friends and strangers (Corley, 1983). Hi's and Lo's did not differ from each other in the stranger condition and there was generally more embarrassment in this condition (indicated by shorter singing times). The interaction between PSC and audience demands was driven by the significantly longer singing time for Hi PSC's in the friends condition; Lo's in that condition were the same as subjects in the stranger condition.

This study demonstrates the fact that people are not equally concerned with the way in which they present themselves in front of all types of audiences. It seems safe to speculate that this will also be true in the case of different types of tasks. This finding, therefore, further underscores the major theme in this discussion of individual differences: consistent with Geen's (1980) criteria for an adequate account of audience effects, one must be able to specify the properties of task demands, audience demands and personality characteristics that are relevant to predicting the interaction of these three components. And furthermore, the taxonomy of these properties is undoubtedly considerably richer than most research has implied by its simple differentiations.

Social Learning Theory

Recall that Geen (1980) identified three components that must be included in an account of behavior in the presence of an audience: task demands, audience demands and personality characteristics. These components seem to be neatly subsumed under Bandura's (1977) conceptualization of the antecedent causes of behavior in terms of two types of expectancies. An efficacy expectancy refers to the individual's belief that he or she can successfully execute a required behavior and an outcome expectancy refers to a person's estimate of the consequences of a behavior. On this analysis, the effect of the presence of an audience on any given individual will depend on how the individual expects to perform the particular task in which he or she is engaged and what effect the individual believes this performance will have on the observer.

As an example of how this framework can be applied, consider an individual who is responsible for getting a job done for a supervisor. That individual may offer to have the job completed within a very short period of time if the variables described above take certain values. If the individual believes he or she is capable of completing the job on time and if he or she believes that this effort will be repaid with some form of favorable treatment in the future, it is likely that he or she will make the offer. If, on the other hand, the individual believes that the job

cannot be completed within the time proposed or if it is thought unlikely that the supervisor will be favorably impressed with the accomplishment, the individual is not likely to make such an effort.

The present studies were designed to relate both of these expectancies to an individual's choice of a strategy for working on a task in the presence of an observer. The general idea is to have an individual work on a task alone and then, after receiving information about how well he or she did on that task, work on a similar task in one of four audience conditions (no audience, casual observer, advisor or evaluator). The efficacy expectancy, or what has earlier been referred to as the task demand, is manipulated by telling subjects that they have either done better than average (Success) or worse than average (Failure). And the outcome expectancy, or what has been conceptualized in a more limited sense as an audience demand in these studies, is manipulated by varying the description of the observer. Obviously, there is no audience demand in the No Audience condition. The audience demand in the Casual Observer condition can be expected to be minimal because the observer has no basis on which he or she can evaluate the performance of the individual. In the Advisor condition, the audience demand increases because the observer understands the nature of the task but, since the two are involved in something of a cooperative venture, the demand should be less here than

in the Evaluator condition where audience demand should be maximal.

If these manipulations are to have any influence on behavior, two conditions must be satisfied. First, the individual must believe that his or her success or failure on the first task is relevant to selecting a strategy on the second task. And second, the individual must believe that the impressions of the observer will be differentially affected by the adoption of different strategies. The first study was designed to check these assumptions. Subjects read a description of an experiment following the lines described briefly above (see also, Appendix A) which took them to the point where they were to select a strategy for the second task. They were then asked what their strategy would be so the choices could be compared between subjects who believed they did above average the first time and subjects who believed they did below average the first time. A difference here would confirm the first assumption. Subjects were then asked to imagine a subject participating in the experiment who has been told his or her performance was either above or below average. For each of four strategies that the hypothetical subject presumably adopted, the subject was asked to rate him or her in terms of likableness, competency and power. Differences in ratings between strategies would confirm the second assumption.

The second study builds on this foundation by having an individual work on the task, receive the feedback and then actually select a strategy for doing the second task with an observer present. Coupled with these experimental manipulations were measures of individual differences that are relevant to both efficacy and outcome expectancies. Public Self-Consciousness is a measure of the degree to which individuals worry about the impressions they are creating in other people. Low PSC's, therefore, should be less inclined to change their behavior to impress an audience than would high PSC's in situations in which the audience can be impressed, i.e., the Advisor and Evaluator conditions. Locus of Control (LOC) is a measure of the degree to which an individual believes that control of events resides in him or herself or in external events. LOC is relevant to both types of expectancies. To the extent that Externals believe their accomplishments are largely a matter of luck, they should tend to discredit the success manipulation. Similarly, they will not believe that their behavior is likely to be the cause of any changes in another individual so the impact of the audience manipulation should be diminished for these subjects.

In these studies, the strategy in the second task consists of selecting some combination of easy, moderate and difficult problems to work on. Subjects must select 15 problems so the level of difficulty they attempt can be

measured by assigning point values of one, two and three to the easy, moderate and difficult problems respectively and then simply calculating the total value for the problems selected.

CHAPTER III HYPOTHESES

Study One

Role-taking

Subjects were asked to imagine they are participating in the experiment and that they have just been told their performance on the analogy tasks is either above or below average. They were then asked to indicate how many of each type of problem, i.e., easy, moderate and difficult, they would select, first, if they wished to maximize their score and second, if they wished to impress an observer with their problem solving ability. It was predicted that subjects would select, on average, more difficult problems in both cases if they believed their performance was above average. No prediction was made as to the exact level of difficulty that would be selected.

Impression of Hypothetical Subject

Subjects were asked to imagine they are observing a hypothetical subject participating in the experiment whom they know to have either been told he or she had done better or worse than average on the first set of problems. Each subject then rated this hypothetical subject in terms of

likableness, competency and power on the assumption that the hypothetical subject selected mostly easy, then mostly moderate, then mostly difficult and finally, an equal number of the three types of problems. The order of these strategies was counterbalanced between subjects. It was predicted that the more successful hypothetical subjects would be rated more favorably, i.e., there should be a main effect for Expectancy. Consistent with the prediction made for the effect of Expectancy in the role-taking task, it was predicted that the selection strategy of choosing more difficult problems in the Success condition would be reflected in the impression formed of the hypothetical subject. That is, a main effect for Selection was expected. No prediction was made as to the exact nature of this effect but hypothetical subjects whose performances are thought to be above average should be rated more favorably as they select more difficult problems while these ratings should peak at a somewhat lower level of difficulty selection in the case of hypothetical subjects who are thought to be below average.

Study Two

Expectancy

An effect due to the Expectancy manipulation was predicted such that subjects who believe they are successful, i.e., told they did better than average on the

first set of problems would select a combination of problems that results in a higher level of difficulty than subjects who believe they are unsuccessful, i.e., told they did worse than average. Since an interaction with the audience conditions was expected, there was no prediction about a main effect.

Audience

It was predicted that the Evaluator audience would produce the strongest audience demands and, hence, have the greatest impact on behavior. The Advisor should be intermediate between the Evaluator and the Casual Observer with the latter creating only a minimal audience demand, having no appreciable effect on behavior when compared to subjects in the No Audience condition. It was predicted that this effect would interact with Expectancy such that, for Success subjects, the proportion of difficult problems attempted would increase as audience demand increased and similarly, for Failure subjects, this proportion would decrease as audience demands increased.

Public Self-Consciousness

It was predicted that PSC would interact with the Expectancy and Audience manipulations. In general, low PSC's were expected to be the least likely to change their behavior in the presence of any audience. Since the Casual

Observer condition was not expected to have an effect on behavior, no change from low to high PSC was expected in this condition. Following the same reasoning, a moderate change from low to high PSC in the Advisor condition and the maximum change from low to high PSC in the Evaluator condition was predicted. In both cases, high PSC's were expected to change their puzzle-solving strategy the most. The direction of this change was expected to be increases in the proportion of difficult puzzles attempted for subjects in the Success condition and decreases in this proportion in the Failure condition.

Locus of Control

It was predicted that LOC would interact with the Expectancy and Audience manipulations in a way that is similar to the three-way interaction described above for PSC. Since Externals do not believe they have much influence on the beliefs and impressions of others, they were not expected to adopt any specific impression management strategy. As well, since they believe their performance is a matter of luck rather than personal ability, they were expected to discount the relevancy of the Expectancy manipulation. Externals, therefore, were not expected to be affected by either the Expectancy or the Audience manipulation. Internals, on the other hand, believe their performance is a matter of ability and that

they can influence others so their performance was expected to follow the pattern described in the Audience section.

CHAPTER IV STUDY ONE

Method

Subjects

Forty-seven male and 52 female subjects participated in the study to partially satisfy requirements in an introductory psychology course.

Questionnaire

The questionnaire consisted of an eight page booklet. The first page briefly explained that the subject would be asked to read a description of a psychology experiment and then have to answer some questions concerning the performance of a hypothetical subject in that experiment. Three examples of analogy problems were also presented, representing the three levels of difficulty.

The second page consisted of a description of the experiment. This description amounted to a paraphrase of the procedure that is detailed for the study described in the next chapter (see also, Appendix A). Briefly, the description explained that the hypothetical subject would work on word analogy problems for a period of ten minutes. At the end of that time, the experimenter would come back

into the room, look at the hypothetical subject's answers and evaluate his or her performance. This account went on to describe the second part of the experiment, explaining that the hypothetical subject would now select some combination of 15 problems from any of three levels of difficulty and work on these problems for as long as he or she wished. It was explained that easy problems each have a value of one point, moderate problems are worth two points each and difficult problems are worth three points. And finally, the subject read that the hypothetical subject would be working in the presence of an observer. The final paragraph on this page instructed subjects to go ahead and answer the following questions about the experiment once they were sure they understood the procedure.

These questions were divided into two groups. The first group consisted of two questions asking the subject to imagine that he or she was the hypothetical subject in the experiment and to predict how he or she would select problems. The second group consisted of ratings the subject would make of the hypothetical subject who participated in the experiment. The order in which these two groups of questions were presented in the booklet varied so half the subjects worked on the first group first and the other half worked on the latter group first.

For the "role-taking" questions, half the subjects were asked to imagine they were told that they had done above

average on the first set of analogy problems and the other half were asked to imagine they had done below average and now had to select 15 problems to work on for the second part of the experiment. They were then asked, "If you wanted the best possible chance of maximizing your score, how many problems would you select from each of the three levels of difficulty?" A second question asked them, "If you wanted to impress the observer watching you with your competency at solving problems, how many problems would you select from each of the three levels of difficulty?"

For the rating questions, half the subjects were asked to consider a hypothetical subject in the experiment who had been told he or she had done worse than average on the first set of analogy problems and the other half were asked to consider a subject who had been told he or she had done better than average. An example of the instructions subjects received to make these ratings is: "Suppose the experimenter told the subject that he or she had not done very well, i.e., worse than most people do on the problems, and the subject then selected mostly easy problems. Rate the subject in terms of the following characteristics." Ratings for likableness, competency and power were obtained on 7-point semantic differential scales. The likableness adjectives were bad/good, unlikable/likable and unfriendly/friendly. The competency adjectives were irrational/rational, incompetent/competent, unintelligent/

intelligent and insecure/selfconfident. And the power adjectives were weak/strong, uninfluential/influential and passive/domineering.

This was repeated so that subjects rated four hypothetical subjects, one who selected mostly easy problems, one who selected mostly moderate problems, one who selected mostly difficult problems and finally, one who selected an equal number of easy, moderate and difficult problems. The order of these selection strategies was varied between booklets.

Procedure

Subjects met in a classroom in groups of approximately 20. After the questionnaire booklets were handed out, the experimenter explained that the subjects would be reading a description of a psychology experiment and then they would have to answer some questions about a subject taking part in that experiment. To encourage them to read the description of the experiment as carefully as possible, they were told there would not be many questions and that it would not take them long to answer them once they understood the nature of the experiment.

Results

The "role-taking" data were analyzed in a 2 (Sex) X 2 (Expectancy) ANOVA with difficulty of problems selected as the dependent variable. The dependent variable was calculated by using the scoring procedure described to the subjects; i.e., easy problems had a value of 1, moderate problems a value of 2 and difficult problems a value of 3. The number of each type of problem selected was multiplied by the appropriate coefficient and these values were then summed. For 15 problems selected, the resulting value could range from 15 to 45.

When subjects were asked what problems they would select if they wanted to maximize their score, there was, as expected, a main effect for expectancy, $F(1, 95)=23.75$, $p<.01$. The difficulty of problems selected by subjects who thought they were above average was greater ($M=33.25$) than that for subjects who thought they were below average ($M=26.72$). The predicted main effect for expectancy was also obtained when subjects selected problems to impress an observer. Subjects expecting to do well selected significantly more difficult problems ($M=34.96$) than did those who expected to do more poorly ($M=31.06$), $F(1, 95)=7.71$, $p<.01$.

To provide a more detailed description of the selection strategy adopted by the subjects when they were choosing problems to maximize their score or impress an observer, the

data were reanalyzed in an ANOVA treating Expectancy as a between subject factor and Goal and Selection as repeated measures (see Table 4.1).

TABLE 4.1

Problem Selection Strategy of Role-taking Subjects

Goal	Expectancy	Problem Selection		
		Easy	Moderate	Difficult
Maximize Score	Success	2.64	6.70	5.66
	Failure	5.52	6.97	2.47
Impress Observer	Success	2.14	5.66	7.20
	Failure	3.25	7.39	4.35

N=99, means are number of each type of problem selected

Of particular interest here is the significant three-way interaction between Expectancy, Goal and Selection, $F(2, 192)=2.92$, $p<.05$. This interaction appeared to be a result of caution exercised by subjects who expected to do poorly and wanted to impress an observer. These subjects selected significantly more easy problems than did subjects expecting to do well, $t(98)=3.66$, $p<.01$. By way of comparison, there was no significant difference, in terms of the number of easy problems selected, between Success and Failure subjects who wished to maximize their score.

The ratings of the hypothetical subject were analyzed in a 2 (Sex) X 2 (Expectancy) X 4 (Selection) ANOVA with Selection as a within subject variable. Likableness, Competency and Power scores were calculated by averaging ratings for each of the items appropriate to the dimensions. The possible range of scores was 1 to 7. Each impression was examined separately with the ANOVA. Average ratings for each impression are presented in Table 4.2 below. Differences between cell means were analyzed with the Bonferroni t statistic. For 6 possible comparisons at the .05 significance level, the critical value is $t=2.77$ (two-tailed).

TABLE 4.2
Average Impressions of Hypothetical Subject

Impression	Expectancy	Problem Selection			
		Easy	Moderate	Mixed	Difficult
Lik'ness	Success	4.28	4.64	4.79	4.64
	Failure	4.08	4.36	4.34	3.93
Competency	Success	3.48	4.89	4.88	5.63
	Failure	3.74	4.61	4.66	3.76
Power	Success	3.11	4.26	4.24	5.50
	Failure	3.52	4.21	4.27	4.68

N=99, higher values are more positive

When subjects were asked to rate the likableness of the hypothetical subject, there was a main effect for Expectancy, $F(1, 97)=14.18$, $p<.01$, with successful subjects being liked more than the unsuccessful ones. There was also a main effect for Selection, $F(3, 291)=6.35$, $p<.01$, but this effect was qualified by the interaction which approached significance, $F(3, 291)=2.46$, $p<.06$. When subjects rated the likableness of a person who did worse than average, this rating improved marginally when the person selected mostly moderate problems or a combination of problems. The choice of difficult problems resulted in a significant decrease in likableness when compared to the moderate selection strategy, $t(47)=2.98$. There was no difference between the ratings for persons who selected easy or difficult problems. When asked to rate the likableness of persons who did better than average, persons who selected easy problems were rated as significantly less likable than persons who made any other selection, e.g., easy vs. mod, $t(50)=2.91$.

When subjects were asked to rate the Competency of the hypothetical subject, there was a main effect for Expectancy, $F(1, 97)=25.15$, $p<.01$, with the successful subjects being rated as more competent than the unsuccessful ones. There was also an interaction between Expectancy and Selection, $F(3, 295)=21.91$, $p<.01$. In the case of hypothetical subjects who did worse than average, these were rated as most competent when they selected either moderate

or a mix of problems. There was a significant increase in rated competency from easy to moderate, $t(47)=4.65$, no difference between moderate and mixed, and a significant decrease from moderate to difficult, $t(47)=3.88$. For hypothetical subjects who did better than average, on the other hand, the rating of competency improved as they selected more difficult problems. There was a significant increase in rated competency from easy to moderate, $t(50)=9.24$, no difference between moderate and mixed, and a further significant increase between mixed and difficult, $t(50)=4.37$.

When subjects were asked to rate the Power of the hypothetical subject, there was an interaction between Expectancy and Selection, $F(3, 291)=9.57$, $p<.01$. The rated power of a subject who did worse than average increased significantly from easy to moderate, $t(47)=4.87$, did not change between moderate and mixed, and then increased significantly between mixed and difficult, $t(47)=3.03$. Exactly the same pattern held for subjects who did better than average except that the increments of significant changes were greater.

In general, then, individuals who do poorly on a task and want to present themselves most favorably while working on a subsequent task should choose a middle of the road course by selecting either problems of moderate difficulty or a combination of problems that averages the difficulty of the

overall task. And those who do well should select the most difficult problems to work on the second time. This finding is consistent with the selection of problems by subjects in the "role-taking" questions. There, subjects indicated they would select mostly moderate problems or a roughly equal number of easy, moderate and difficult problems if they thought they were not doing as well as most people. Subjects who believed they were doing better selected a greater percentage of difficult problems.

CHAPTER V STUDY TWO

Method

Overview

Subjects worked alone on word analogy problems for five minutes. The experimenter then examined their work and asked them to try more puzzles in a second session. Using bogus feedback regarding their performance on the first set of problems and descriptions of the persons to be observing them while they work on the second set of problems, the effect of Expectancy and Audience-type on behavior was assessed. The dependent variable was the proportion of easy, moderate and difficult problems attempted in the second session. Subjects were assessed for Public Self-Consciousness and Locus of Control and both of these personality characteristics were introduced in a regression model to determine the interactive effect of these individual differences with Expectancy and Audience on behavior.

Subjects

One hundred and twenty-three subjects participated in the experiment to partially satisfy requirements in their introductory psychology course. The data obtained from 14 additional subjects were not included in the analysis because Public Self-Consciousness scores were not available for them. The subjects were predominantly white and all indicated that they had worked on word analogy problems in the past.

Analogy Task

These analogies were drawn, for the most part, from a practice workbook for the Miller Analogy Test. An example is: Megan Neyer is to diving as Tracy Caulkins is to _____ (see Appendices B and C). Each problem was printed on a separate card with four alternative answers below the problem. Answers were indicated by circling the appropriate letter on a separate answer sheet. The deck of problems for the first part of the experiment consisted of easy, moderate and difficult problems that were randomly distributed within the deck.

Personality Instruments

Rotter's (1966) Locus of Control Scale and the Self-Consciousness Inventory (Fenigstein, Scheier & Buss, 1975) were used to assess individual differences among the

subjects. The SCI consists of 23 items scored on a five-point Likert scale. Six of these items measure Public Self-Consciousness. Examples of these items are: "I'm concerned about what other people think of me" and "I usually worry about making a good impression." The test-retest reliability of these items over a two week period is .84 (Fenigstein et al., 1975).

The LOC scale employs a forced choice format. Following Mirels' (1970) factor analysis of the scale, ten pairs of responses were selected that measure individuals' expectancies about the locus of control for events occurring within a personal realm. An example of such a pair is: a) "In my case getting what I want has little or nothing to do with luck" and b) "Many times we might just as well decide what to do by flipping a coin." In this example, (a) represents an internal response and (b) represents an external response. The test-retest reliability of the scale over a one month period is .72 (Rotter, 1966).

Procedure

Each subject participated in the experiment individually. They were met by the experimenter in the laboratory which was set up with a table and chair and the analogy problems, printed on separate cards, in a deck already on the table. The experimenter explained that the experiment is divided into three parts and that only the first part of the

experiment would be described at this time. This first part, the subject was told, consists of working on a set of analogy problems for five minutes. The experimenter then drew the subject's attention to the first problem, showed how to solve it and then indicated how to record the answer on the answer sheet. The experimenter then gave the following instructions: "Okay, what I want you to do is work on these problems for five minutes once I leave the room. There are probably more problems here than you can complete in five minutes but don't worry about that, just work at your own pace and see how many you can get through. At the end of five minutes I'll come back and tell you about the second part of the experiment. Do you have any questions?"

At the end of five minutes the experimenter reentered the room and picked up the answer sheet, telling the subject that he or she would see how they did. The Expectancy manipulation was introduced at this point by the experimenter telling the subject: "I can tell you a bit about the scoring procedure. You might have noticed that some of the problems were more difficult than others. What we do is award one point for the easiest problems, two points for the moderate ones and three points for the most difficult ones. We've had a number of college students working on these problems and we have their total scores for any given number of problems attempted." For subjects in

the failure condition, this explanation continued as, "You didn't have any trouble with the easy problems but you did miss most of the difficult problems that are worth three points each so your total score for [experimenter states number of problems subject attempted] problems is below average." Subjects in the success condition were led to believe that they had done well on both the easy and difficult problems so that their total score was above average.

After asking if the subject had any questions about this, the experimenter then went on to tell him or her about the second part of the experiment. It was pointed out that this would involve more work on analogy problems but that there would be a couple differences. While the experimenter spread three decks of 15 problems each in front of the subject, he or she explained that earlier research indicated that subjects optimized their scores if they were able to select their own problems. For that reason, the subject was told, he or she would be able to select 15 problems from any of the three levels of difficulty and then work on these 15 problems for as long as he or she wished. The experimenter identified which decks contained which types of problems and reminded the subject that the problems were worth the same number of points as in the first part of the experiment. Finally, the subject was told to put the problems he or she didn't want to attempt in an envelop on the table and use

the answer sheet to record his or her answers to the other problems. If the subject was to be in the No Audience condition, the experimenter left the room at this point, telling the subject to come out into the hall when he or she was finished.

If the subject was to be in one of the audience conditions, after telling the subject how to work on the next task, the experimenter went on to say that he or she would like to bring someone in to watch the subject this time. Before bringing the observer in, the experimenter told the subject that the observer did not know about the first part of the experiment and so he or she did not know how the subject had done on the first set of problems. Once this was explained, the experimenter brought the observer into the room and introduced him or her by name. For female subjects, the observer was always a female and for male subjects, the observer was always a male.

In the Casual Observer condition, the observer was introduced as a psychology student who was taking a research methods class and wanted to see how an experiment was run. The subject was told that the only thing the person knows about this experiment is that the problems are of different levels of difficulty and that the subject would be selecting the ones he or she wanted to attempt. In the Advisor condition, the observer was introduced as an advanced student in linguistics who would go over the problems with

the subject later to help him or her do better on them. In the Evaluator condition, the audience was introduced as an advanced student in linguistics who would be evaluating the subject's verbal reasoning ability on the basis of how well he or she had performed on the problems.

When the subject finished working on the problems, the experimenter came back into the room and picked up all the materials and then gave the subject the Locus of Control questionnaire to complete. The experimenter told subjects in the No Audience and Casual Observer conditions that the only thing left was to fill out the questionnaire. Subjects in the Advisor and the Evaluator conditions were told that the observer needed a couple minutes to look over the problems so, while they are waiting, the subjects could fill out the questionnaire.

In the debriefing session, the subjects were first asked how difficult they thought the first set of analogy problems was and then whether or not they were surprised about how they did on them. They were then asked if this information (about how they had done) affected their choice of problems in the second part of the experiment. For subjects in one of the audience conditions, the experimenter then asked them if the presence of the observer had distracted them and then if the fact that someone was watching them had influenced their selection of problems. After these questions were answered, the purpose of the observer was explained (if

appropriate) and the nature of the expectancy manipulation was explained. It was impressed on the subjects that this feedback was random and that the experimenter had no idea how their performance on word analogy problems compared to that of other students.

Results

Since both males and females were used in the study, all the analyses reported were first run treating Sex as an independent variable. In no case was this found to have an effect, either direct or interactively, on the results so the data were collapsed across Sex for all analyses. To investigate the problem selection strategy and compare it to the one predicted by "role-taking" subjects in the first study, a 2 (Expectancy) X 4 (Audience) X 3 (Selection) ANCOVA was run with number of easy, moderate and difficult problems as the repeated measure (see Table 5.1). There was a main effect due to Selection, $F(2, 230)=74.74$, $p<.01$.

This pattern was only partially qualified by an interaction between Audience and Selection, $F(6, 230)=2.13$, $p<.05$. To display the interaction more clearly, the mean number of problems selected was collapsed across Expectancy since this factor was not found to have an effect on the data (see Table 5.2). It appeared that subjects in the Casual Observer and Evaluator conditions selected fewer moderate problems and correspondingly more easy problems

TABLE 5.1

Choice of Problems by Audience and Expectancy

Audience	Expectancy	Problem Selection		
		Easy	Moderate	Difficult
None	Success	1.64	9.92	3.42
	Failure	3.37	10.06	1.56
Casual Observer	Success	4.18	7.68	3.12
	Failure	4.37	8.06	2.50
Advisor	Success	2.21	9.50	3.28
	Failure	4.13	8.86	2.00
Evaluator	Success	4.26	7.33	3.40
	Failure	4.17	7.52	3.29

N=123, means are number of each type of problem selected

than did subjects in the other two Audience conditions. In their selection of easy problems, subjects who were alone did not differ from subjects in the Advisor condition while subjects who were alone selected significantly fewer problems than did subjects in the Casual Observer condition, $t(60)=2.08$, $p<.05$, and also significantly fewer problems than did subjects in the Evaluator condition, $t(60)=1.97$, $p<.05$. When subjects selected moderate problems, those who were alone did not differ from those in the Advisor condition and those in the Casual Observer condition did not differ from the those in the Evaluator condition. Subjects

in the Evaluator condition selected significantly fewer moderate problems than did subjects in the Advisor condition, $t(59)=2.06$, $p<.05$, and subjects in the Casual Observer condition selected significantly fewer moderate problems than did those who were alone, $t(60)=2.25$, $p<.05$. There were no significant differences between any of the groups of subjects in their selection of difficult problems.

TABLE 5.2
Problem Selection Strategy

Audience	Problem Selection		
	Easy	Moderate	Difficult
None	2.56	10.00	2.43
Casual Observer	4.28	7.87	2.81
Advisor	3.20	9.17	2.62
Evaluator	4.21	7.43	3.34

N=123, means are number of each type of problem selected

The effect of Public Self-Consciousness was examined in a regression analysis with Expectancy and Audience entered into the model as categorical variables and PSC entered as a continuous variable. The dependent variable was the level of difficulty selected. This was computed by multiplying

the number of each type of problem selected by their respective value coefficients (one for the easy problems, two for the moderate problems and three for the difficult problems) and then summing these results. There was a main effect for Expectancy, $F(1, 114)=4.10$, $p<.01$, with Success subjects selecting more difficult problems than Failure subjects. The expected three-way interaction between Task, Expectancy and Audience was not significant but there was an interaction between Audience and PSC that approached significance, $F(3, 114)=2.39$, $p<.07$.

This interaction took the following form. The slopes of the regression equations in the No Audience condition ($b=.24$), the Casual Observer condition ($b=.05$) and the Advisor condition ($b=.22$) did not differ from each other and were not significantly different than 0. The slope in the Evaluator condition ($b=-.50$) differed significantly from that in the No Audience condition, $t(58)=2.44$, $p<.01$, the Casual Observer condition, $t(60)=1.86$, $p<.06$, and the Advisor condition, $t(59)=2.29$, $p<.02$.

The effect Locus of Control was examined in a similar regression model. The same main effect for Expectancy was found but no other effects were significant. After failing to find an effect for the personal items that had been identified by Mirels' (1970) factor analysis of the LOC scale, scores for the entire scale were entered into the model and still no effect was found.

CHAPTER VI DISCUSSION

The central hypothesis in this research was that audience effects can best be understood as an interaction of three factors: task demands (operationalized by expectancy of success or failure), audience demands (operationalized by the description of an observer) and individual differences (public self-consciousness and locus of control). While this hypothesis did not receive the unqualified support that was hoped for, taken together, the two studies do present considerable evidence that at least points toward this proposition.

The general idea is that the presence of an observer changes the nature of the task. This change is the result of broadening the original goals of the behavior by including strategies designed to present the self most favorably to the observer. It was believed that the three factors included in the studies would all be necessary components in an explanation of changes in behavior that correspond to the changes in the nature of the task. To understand these changes, one must know the extent to which the individual is concerned with presenting him or herself in a favorable light, the extent to which the individual

believes that the observer's impression will change as a function of how he or or she performs the task, and the individual's beliefs about his or her ability to perform the task in the desired way.

The first study established several important points in this regard. First, it demonstrated that the strategy an individual adopts to carry out a task is influenced by the degree of success the individual anticipates. As well, it showed that peoples' impressions of an individual working on a task may change as a function of the individual's strategy and anticipation of success. And finally, the three-way interaction involving Goal and Expectancy indicated that an individual's anticipation of success or failure will differentially affect his or her strategy as a function of the goal of the behavior. In this case, when the goals of impressing an observer and maximizing one's score were compared, subjects who anticipated failure and wanted to maximize their score were more cautious, i.e., selected a greater proportion of easy problems, than the others.

Having established that selection of problems can be influenced by the expectancies and goals of the individual and that this selection can influence an observer's impression of the individual, the second study built on this to examine the impact of different audiences and relevant personality characteristics on behavior in the presence of an audience. The description of the observer was varied in

an attempt to heighten the evaluative potential (or threat) of certain audiences and, at the same time, their susceptibility to impression management. Obviously the No Audience condition carries no threat and no opportunity for self-presentation so no change in behavior was expected in that condition. The casual observer, who knows little about the task, should carry little threat and be relatively immune to the performance of the subject so little change in behavior was expected here as well. The greatest change in behavior was expected to occur in the Advisor and Evaluator conditions since both these observers are familiar with the task. This effect would be moderated, however, in the case of the advisor because of his or her cooperative role.

But when the effect of the audience was examined in an analysis of variance, it was found that there was little difference between the casual observer and the evaluator and little difference between no observer and the advisor. This suggests that the potential for evaluation is implicit in any observer and that explicit evidence to contrary is essential to counteract this implied threat. Apparently identifying the observer as a cooperative agent had this effect.

This finding is not without precedent for Geen (1977), working with a performance measure as the dependent variable, found no difference between an Alone and an Advisor condition. At the same time, however, it must be

remembered that the "mere presence" hypothesis has stirred considerable controversy as it has undergone a cyclical ebb and flow of support. Since blindfolded, inattentive and otherwise occupied audiences sometimes do and sometimes do not affect behavior, it seems that one would be well advised to exercise caution in speculating about the demands created by a particular observer. If, as I suggested, explicit information tending to rule out the likelihood of evaluation is required, it seems that the nature of this information is an empirical issue demanding careful investigation.

Turning now to the question of the effect that individual differences have on behavior in the presence of an observer, two personality dimensions seemed especially relevant. Public self-consciousness was selected because it describes an individual's concern with how his or her behavior is impressing another person. Locus of control was selected because it differentiates people in terms of their beliefs about the effect of their behavior on others and in terms of whether they attribute their performance to personal abilities or external contingencies. Again, the specific hypotheses did not fare so well. It was predicted that increases in both public self-consciousness and internality in locus of control would result in a greater tendency to adjust behavior to the demands of the task and the observer. This was not found to be true in the case of locus of control and, in the case of public self-consciousness, it was found to be only partly true.

Where audience demands were expected to be the strongest (i.e., in the Evaluator condition), it was hypothesized that subjects who were most publicly self-conscious would show the greatest increase in proportion of difficult problems selected if they were in the Success condition and the greatest decrease if they were in the Failure condition. As it turned out, increases in public self-consciousness were associated with decreases in the proportion of difficult problems selected in both Expectancy conditions.

Unfortunately, the existing research provides little insight into why this might have happened. In a discussion of the role of expectancy in audience effects, Geen (1977) commented that the literature is inconclusive, and things do not seem to have changed a great deal since then. There are studies in which Success subjects improve in the presence of an audience while Failure subjects do not change (Good, 1973). There are also studies in which Failure subjects do worse in the presence of an audience while Success subjects do not change (Seta & Hassan, 1980).

The Good study may be particularly relevant here since he contrasted evaluative and non-evaluative audience conditions and also examined the effect of Social Desirability in an analysis of covariance. Using response time in a paired-associate learning task, he found no difference between Success and Failure subjects in the non-evaluative condition and faster responding for Success subjects in the evaluative

condition. He also found that subjects most concerned with social desirability gave the fastest responses.

Also relevant on this point is a study by Carver, Elaney and Scheier (1979) in which they examined factors affecting an individual's persistence on a task. Carver and Scheier (1981a) maintain that the expectancies of positive and negative outcomes should result in a sort of "watershed" effect with positive outcome expectancies leading to improvements and negative outcome expectancies leading to decrements. This, of course, is the sort of effect that was predicted in the present studies. Carver et al. (1979) had subjects work on two tasks and gave them success or failure information after the first task. They then had half the subjects in each expectancy condition do the second task in front of a large mirror while the others worked with the mirror covered. (This mirror manipulation is supposed to make subjects more privately self-aware [Buss, 1980] so this amounts to an experimental induction of increased private self-consciousness.) The "watershed" effect was found for subjects in the mirror condition (analogous to high private self-conscious) while there was no difference between Success and Failure subjects when the mirror was not present.

So what went wrong? A possible answer may lie in a methodological point covered by Carver et al. (1979). On a first attempt, they found that, following the expectancy

manipulation, subjects' self-reports of their expectancy were negative for the failure manipulation but only neutral for the success manipulation. Evidently the former manipulation had a greater impact (or was more readily believed) than the latter. If this was also the case in the present study, this could account for the failure to obtain an increase in level of difficulty attempted by Success subjects.

An alternative explanation may lie in the way subjects selected problems to work on in the second task and in the nature of these problems. The cards on which the problems were printed were always in the same order in the decks (the same order as the listing in Appendix C) and it happens that the first few difficult problems are very difficult. In fact, they are probably more difficult than any of the problems in the first task (see Appendix B to compare). If, as seems inevitable, the majority of subjects glanced at the problems as they were selecting them, these first few problems may have scared them away from the deck of difficult problems. If this was the case, then even though the subjects might have believed that the best strategy for impressing the observer would have been to select difficult problems (see Study One), they may have felt that this strategy was impractical for other reasons. Indeed, if the subjects thought that the first two or three problems in the difficult deck were more difficult than any they'd

encountered in the first task, this may have undermined the Success manipulation by bringing its predictiveness into question.

Notwithstanding the apparent inconclusiveness of these studies, a couple important considerations do arise from the findings. Both pertain to the variables used in the examination of audience effects.

In reviewing the literature, I made the point that most studies of audience effects, especially those pertaining to social facilitation, used some sort of quantitative or performance measure as the dependent variable. While this may be a natural outgrowth of the original theoretical formulation of audience effects, exclusive reliance on this type of measure may unduly limit our ability to study, and hence our understanding of, the phenomena. The teleological accounts of these effects suggest that it is plausible to suppose that the presence of an audience may, in some circumstances, lead to a more qualitative or strategic change in behavior rather than a simple change in magnitude of response as new goals come into play.

In the present studies, subjects could vary the difficulty of the task they had to do while being observed. The first study indicated that the selection of problems to attempt was influenced by the subject's expectancy regarding how well he or she could do and by the goal of the task. This differential adoption of strategies was again

demonstrated in the second study when it was found that expectancy and type of audience influenced the selection of problems. The appropriateness of this type of measure in the study of audience effects is, therefore, clearly established. It may, in fact, be that this is a more desirable measure in so far as it is more general and potentially more sensitive. It is more general in two senses. First, it is not tied to one theoretical orientation in the way that a magnitude of response measure seems to be tied to drive theories. And second, the idea of a strategic decision is broad enough to embrace magnitude changes since the person could decide to work faster (or slower) as a new strategy. I say it may be more sensitive because it is easy to imagine people continuing to work at the same rate on a task in situations where they might adopt a qualitatively different strategy if one was available.

These studies also address the question of experimental design in research on audience effects. I initially hypothesized that these effects would be the product of an interaction between task demands, audience demands and relevant individual differences. Although this three-way interaction failed to materialize, these factors were found to interact with each other in the two studies. Within the framework of Bandura's social learning theory, task demands refer to efficacy expectancies and audience demands are an instance of outcome expectancies. Study One provided

evidence of an interaction between these two expectancies while Study Two demonstrated an interaction between audience demands and public self-consciousness. And what is more, it does not seem entirely unreasonable that a more effective success manipulation could reveal the three-way interaction that was expected.

This raises an important methodological point for, once factors have been shown to interact with each other, it is extremely difficult to interpret the results of a study that manipulates one of these factors in isolation (Barber, 1976). This consideration receives added importance in the present case because one of the interactive factors is an individual difference that is brought into every design (unless the researcher explicitly controls for it with subject screening). The within group variability introduced by this factor could easily disguise many effects if it is allowed to persist as an uncontrolled element in the phenomena.

To summarize the findings in these studies, let's begin by assuming that everything had worked out as I initially predicted. If this happy state of affairs had arisen, the present research would have had both theoretical and methodological implications for the study of audience effects. From the theoretical perspective, it would have been difficult to reconcile the results with the host of available drive-related theories. I have already gone over

the major conceptual and empirical difficulties that these theories encounter. The most obvious obstacle that the present studies would present these theories is the directional or "watershed" effect of the expectancy manipulation. There simply does not seem to be any way to translate increases in drive into differential changes in strategy, especially when the expectancy is not veridically related to actual performance.

I have taken this directional effect to be the main piece of evidence for some sort of teleological theory of audience effects. This argument is further bolstered by the findings in the first study indicating that different goals (maximize score vs. impress observer), as well as different expectancies, are associated with different strategies. In that study, it will be recalled that the problem selection of Failure subjects trying to maximize their score differed from that of Failure subjects trying to impress an observer.

The methodological implications have just been reviewed so there is no need to repeat them in the space of a page or two. Suffice it to say that these studies contain ample evidence of the appropriateness of the dependent variable that was used and that, had the three-way interaction materialized, the case against simpler designs would have been very strong.

But since the studies did not produce results exactly as they were expected, to what extent are these conclusions

impugned? I think the answer is, only minimally. It must readily be conceded that the sought-after direct support for the central hypothesis of an interaction between task demands, audience demands and individual differences did not materialize. But the contention that many accounts of audience effects have oversimplified the phenomena still enjoyed considerable support of a more indirect nature in the two studies. At first blush, the results of the second study appear to be consistent with the evaluation apprehension hypothesis advanced by Weiss and Miller (1971). They contend that only an evaluative audience has an impact on behavior and that this impact is a result of anticipating negative outcomes. If we assume that the advisor, in his or her cooperative role, would not be a source of negative outcomes, this would account for the similarity of the Advisor and No Audience conditions. And if we assume that even the Success subjects believed that the evaluator would find something to criticize in their effort (regardless of the fact that it was comparatively better than average), this explanation would seem to account for all the findings in the second study.

But this account runs into trouble in explaining the findings of the first study where it is clear that the intended result of the behavior influenced the subjects' attempts to adjust their behavior. Apprehension, stripped clean of any finer differentiation, seems incapable of

explaining this adoption of different strategies. The support, therefore, lies in the complexity of the phenomena as it was revealed in these two studies. And of course, secondarily, it resides in a charitable assessment of my explanation of the second study's failings.

The interactions found in the two studies also support the methodological claim that studies designed to investigate audience effects have frequently run the risk of being too simple. In fact, the situation is probably even more complex than is suggested in this research. If individuals differ with respect to what they believe to be the relevant dimension of their performance under evaluation by an observer, evaluative audiences may present different audience demands for two different individuals. And this is further complicated by potential individual differences in motivation with respect to these dimensions. Two individuals may differ, for example, on how concerned they are about another person's judgment of their intellectual ability. In short, omnibus self-consciousness or social desirability scales may not be finegrained enough to measure individual differences that are relevant to given task and audience demands.

This, incidentally, may account for the failure of the Locus of Control scales to predict the behavior of subjects in the second study. Rotter (1966) went to great lengths to relate the scale with generalized expectancies. Within the

context of social learning theory, such expectancies can be quickly overridden whenever an individual has more immediate experiences, and hence more specific expectancies, with a particular kind of situation. Past experiences with word analogies may have divorced work on this sort of task from the generalized expectancies measured by the LOC scale.

This brings us to the last point about the task measure in research on audience effects. While I have argued, both conceptually and empirically, that an appropriate measure should be sensitive to qualitative or strategic shifts in performance, I am most emphatically not arguing that the sort of task used in these studies is ideal. On the contrary, there is likely no single task that can be universally used in research on audience effects. The most appropriate conclusion to draw on this point may be that audience effects are as peculiar to a particular task as they are to specific variations in the independent variables that have been investigated. This turns out to be consistent with Geen's (1980) contention that an adequate appreciation of the effect of the presence of an observer must take into account the motivational characteristics of the individual as they are related to both the particular task and the particular observer.

APPENDIX A
DESCRIPTION OF THE EXPERIMENT

The subject is met by the experimenter who takes him or her into a room. In that room is a table and chair. On the table is a deck of 50 cards. One analogy problem is printed on each card in the deck. Problems of the three levels of difficulty are equally included in this deck.

Once in the room, the experimenter explains that the experiment will be divided into two parts and that each part will be explained to the subject as they get to it. The experimenter then begins to explain the first part, telling the subject that he or she will have ten minutes to work on the analogy problems that are printed on the cards. At this point the experimenter doesn't say anything about the different levels of difficulty. The experimenter completes the first problem as an example for the subject and then tells the subject that he or she will return in ten minutes. The experimenter then leaves the room.

At the end of ten minutes the experimenter returns and picks up the problems that the subject has worked on along with the answer sheet. He or she then compares the subjects's answers with the answer key and tells the subject how well he or she did.

Following this evaluation of the subject's work, the experimenter describes the second part of the experiment. The second part is actually very similar to the first part with two exceptions. During the second part of the experiment, the subject will have to work on the analogy problems while being watched by another person. Also, in the second part the three levels of difficulty will be divided into separate piles so the subject can select easy, moderate or difficult problems to work on.

The experimenter explains that the evaluation is based on the following scoring method. Easy problems are worth one point each, moderate problems are worth two points each and difficult problems are worth three points each. The experimenter also tells the subject that he or she must select 15 problems to work on during the second part of the experiment. These 15 problems can be drawn from just one of the the levels of difficulty or the selection can consist of any combination of the three levels of difficulty. For example, one subject might select five problems from each level while another subject might select 8 difficult problems and 7 easy problems.

The experimenter also tells the subject that he or she can have as much time to work on the problems as they need. They are also told that the person who will be watching them has no idea of how well they did on the first set of problems. Once the subject understands all this, the

experimenter brings the observer into the room and then the experimenter leaves before the subject selects the problems he or she wants to work on.

Once you understand this experiment, please answer the following questions. If you have any questions about the nature of the experiment, feel free to ask one of us these questions.

APPENDIX B
ANALOGY PROBLEMS FOR FIRST TASK

NOSE : SMELL :: TEETH : _____

- a) see b) dentist c) chew d) toothpaste

NET : FISHERMAN :: GUN : _____

- a) bullet b) deer c) policeman d) hunter

CAT : CARNIVOROUS :: PONY : _____

- a) horse b) herbivorous c) ruminant d) quadriped

DISTRACTING : NOISE :: SOOTHING : _____

- a) medicine b) music c) bleeding d) opera

SUGAR : MEAT :: CARBOHYDRATES : _____

- a) proteins b) fats c) vitamins d) calories

OPTIC NERVE : SIGHT :: OLFACTORY NERVE : _____

- a) hearing b) taste c) smell d) touch

PLAYER : TEAM :: EAR : _____

- a) face b) body c) head d) brain

NEWTON : CALCULUS :: COPERNICUS : _____

- a) geography b) archaeology c) astronomy d) physics

ONTARIO : CANADA :: YUCATAN : _____

- a) Alaska b) Mexico c) Guatemala d) Ecuador

EDUCATED : KNOW :: RICH : _____

- a) poor b) own c) wise d) intelligent

TOXICOLOGY : POISONS :: NUMISMATICS : _____

- a) coins b) fossils c) guns d) stamps

CORNEA : EYE :: COCHLEA : _____

- a) spine b) heart c) ear d) intestine

CALF : COW :: CUB : _____

- a) scout b) bear c) baby d) woods

INCLEMENT : CLEAR :: PERTINENT : _____

- a) pert b) cloudy c) irrelevant d) perceptive

OCTET : OCTAHEDRON :: SEXTET : _____

- a) sexton b) polyhedron c) septihedron d) cube

SUCCEED : FAIL :: PROPER : _____

- a) incorrect b) proposed c) propped d) fatherly

BACKWARD : FORWARD :: ANCESTRY : _____

- a) lineage b) progeny c) prototype d) prodigy

LABOR : WAGES :: CAPITAL : _____

- a) industry b) stockholder c) interest d) union

PECULIAR : DISTINCTIVE :: UNFORTHWARD : _____

- a) unexpected b) unfavorable c) reserved d) fortuitous

TODAY : YESTERDAY :: PRESENT : _____

- a) yesterday b) now c) past d) gift

MONARCHY : KING :: DEMOCRACY : _____

- a) vote b) freedom c) people d) congress

PHLEGMATIC : CHOLERIC :: CIRCUMSPECT : _____

- a) timid b) blind c) mute d) temerarious

CERTIFY : ATTEST :: CAPTIVATE : _____

- a) fascinate b) admire c) castigate d) promulgate

ENOUGH : EXCESS :: SUFFICIENCY : _____

- a) surplus b) adequacy c) competency d) optimum

GARROTING : DEATH :: FRICTION : _____

- a) rubbing b) lubricant c) heat d) slaughter

INTELLIGENCE : IDIOT :: WEALTHY : _____

- a) money b) poverty c) millionaire d) pauper

NORTH : SOUTH :: NORTHEAST : _____

- a) southwest b) southeast c) northwest d) westerly

SHABBY : SHABBILY :: HARMONIOUS : _____

- a) harp b) harmonica c) harmoniously d) harmony

GLORY : SHAME :: VICTORY : _____

- a) defeat b) winner c) reward d) conqueror

SUNDER : CONSOLIDATE :: TANGIBLE : _____

- a) abstract b) tasty c) possible d) tangled

WIRE : ELECTRICITY :: PIPE : _____

- a) power b) fervid c) gas d) tobacco

RESEARCH : DISCOVERY :: PRAYER : _____

- a) church b) bible c) religion d) fulfilment

CALF : SHOE :: GOOSE : _____

- a) feature b) gander c) geese d) pillow

VALLEY : GORGE :: MOUNTAIN : _____

- a) hill b) cliff c) pinnacle d) high

PUNGENT : ODOR :: SHRILL : _____

- a) whisper b) shriek c) depth d) sound

MELON : RIND :: ANIMAL : _____

- a) skin b) horn c) fox d) cage

HEAR : SOUND :: SEE : _____

- a) move b) taste c) picture d) vision

FOOD : NUTRITION :: LIGHT : _____

- a) vision b) bulb c) electricity d) watt

PRESENT : BIRTHDAY :: REWARD : _____

- a) accomplishment b) punishment c) medal d) money

HORSE : RIDER :: ENGINE : _____

- a) passenger b) engineer c) train d) coal

FLY : SPIDER :: MOUSE : _____

- a) rat b) cat c) rodent d) animal

CRATER : VOLCANO :: CHIMNEY : _____

- a) fire b) house c) fuel d) smoke

PETAL : FLOWER :: FUR : _____

- a) coat b) rabbit c) warm d) woman

tone : hearing :: color : _____

- a) pigment b) sight c) melody d) picture

valor : cowardice :: white : _____

- a) color b) yellow c) pigment d) black

rice : cereal :: apple : _____

- a) pear b) peel c) fruit d) box

week : day :: day : _____

- a) month b) second c) hour d) night

air : suffocation :: food : _____

- a) starvation b) indigestion c) energy d) life

APPENDIX C
ANALOGY PROBLEMS FOR SECOND TASK

Easy Problems

PRESIDENT : NATION :: MAYOR : _____

- a) ruler b) state c) city d) governor

TABLE : CLOTH :: BED : _____

- a) blanket b) mattress c) pillow d) spread

GOOD : BETTER :: BAD : _____

- a) terrible b) worse c) improvement d) worst

SNOW : WINTER :: RAIN : _____

- a) wet b) summer c) cold d) flood

LADDER : RUNG :: STAIRWAY : _____

- a) building b) floor c) step d) escalator

SHOE : FOOT :: HAT : _____

- a) coat b) hair c) head d) hat pin

LID : BOX :: CORK : _____

- a) preserver b) bottle c) whiskey d) fire

BIRDS : SINGING :: DOGS : _____

- a) chewing b) barking c) biting d) stealing

PIG : PORK :: STEER : _____

- a) corral b) ranch c) beef d) cowboy

ENEMY : HATE :: FRIEND : _____

- a) reject b) contend c) love d) reply

SHIP : DOCK :: AUTOMOBILE : _____

- a) garage b) compact c) fender d) mechanic

HONEY : MILK :: BEE : _____

- a) flower b) farmer c) pail d) cow

HOOR : MINUTE :: MINUTE : _____

- a) time b) day c) second d) moment

WHEEL : BUGGY :: RUNNER : _____

- a) sled b) horse c) snow d) race

CENTURY : DECADE :: DIME : _____

- a) lucre b) cent c) age d) nickle

Moderate Problems

TASTE : TONGUE :: TOUCH : _____

- a) finger b) eye c) feeling d) borrow

RASCAL : LIE :: GENTLEMAN : _____

- a) friend b) reply c) lady d) truth

CRIMINAL : PRISON :: PATIENT : _____

- a) illness b) doctor c) cure d) hospital

PAST : FUTURE :: MEMORY : _____

- a) study b) imagination c) blank d) drain

DISTANT : REMOTE :: NATIVE : _____

- a) indigenous b) Indian c) foreign d) ethical

TRAIN : CONTINENT :: STEAMSHIP : _____

- a) lane b) ocean c) planet d) captain

DISTANCE : MEASUREMENT :: MASS : _____

- a) pound b) weight c) matter d) scale

INCLUDE : OMIT :: RECOGNIZE : _____

- a) notice b) ignore c) acknowledge d) greet

BOOKS : LIBRARY :: WHEAT : _____

- a) oats b) granary c) breakfast d) field

CELL : TISSUE :: TISSUE : _____

- a) system b) organ c) organism d) mammel

STUDY : LEARN :: TRY : _____

- a) begin b) attempt c) fail d) succeed

ALONE : COMPANY :: SAFE : _____

- a) solitude b) assembly c) danger d) security

REVOLUTION : LAND :: MUTINY : _____

- a) captain b) mutilate c) bounty d) sea

ROMANCE : MOON :: RIBBON : _____

- a) gift b) horse c) baloney d) city

FOUR : THREE :: SQUARE : _____

- a) rectangle b) angle c) triangle d) box

Difficult Problems

DUPLICITY : DISSIMULATION :: GREED : _____

- a) greed b) cupidity c) need d) grit

SYSTOLE : DIASTOLE :: TRUNCATION : _____

- a) shrinkage b) elongation c) mutilation d) trunk

DISCIPLE : MENTOR :: PROSELYTE : _____

- a) expedition b) leader c) football d) follower

LACONIC : DISTENDED :: SUPPLE : _____

- a) tasty b) limp c) sloppy d) given

SPLENETIC : BENIGNANT :: ENIGMATIC : _____

- a) pellucid b) festoon c) opacity d) problematic

ATHEIST : AGNOSTIC :: GODLESS : _____

- a) god-fearing b) doubting c) bigoted d) pedantic

ETYMOLOGY : WORDS :: HAGIOLOGY : _____

- a) saints b) senility c) selling d) writing

CATALYST : CHANGE :: ACCELERATOR : _____

- a) cylinder b) inertia c) motion d) exhaust

CAUTIOUS : CIRCUMSPECT :: PRECIPITOUS : _____

- a) deep b) flat c) high d) steep

ADUMBRATE : FORESHADOW :: DECLINE : _____

- a) increase b) decrease c) stultify d) stupefy

ECUMENICAL : CHURCH :: CULINARY : _____

- a) bedroom b) closet c) knife d) kitchen

ENTOMOLOGIST : INSECTS :: PHILOLOGIST : _____

- a) philosophy b) language c) logic d) decadence

COMBUSTIBLE : INFLAMMABLE :: VOLATILE : _____

- a) voluble b) flighty c) inert d) inviolate

NOXIOUS : INJURIOUS :: SALACIOUS : _____

- a) salable b) delicious c) gustatory d) obscene

NAIVE : SOPHISTICATED :: INGENUOUS : _____

- a) candid b) artful c) inventive d) hapless

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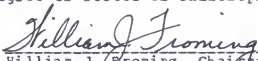
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BIOGRAPHICAL SKETCH

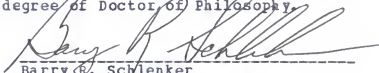
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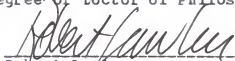
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